



GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, PENDING

PRAI US 2000-254418P 20001208 (60)  
US 2000-255236P 20001211 (60)  
US 2001-282640P 20010409 (60)  
US 2000-224631P 20000811 (60)  
US 2000-192699P 20000328 (60)  
US 2000-254392P 20001208 (60)  
US 2000-255235P 20001211 (60)  
US 2000-176409P 20000113 (60)  
US 2000-213906P 20000626 (60)  
US 2000-200161P 20000426 (60)  
US 1996-31809P 19960729 (60)

DT Utility

FS APPLICATION

LREP MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP, 300 S. WACKER DRIVE, 32ND FLOOR, CHICAGO, IL, 60606, US

CLMN Number of Claims: 29

ECL Exemplary Claim: 1-598

DRWN 70 Drawing Page(s)

LN.CNT 8652

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 2 OF 9 USPATFULL on STN

AN 2004:144556 USPATFULL

TI Nanoparticles having oligonucleotides attached thereto and uses therefor

IN Mirkin, Chad A., Wilmette, IL, UNITED STATES

Letsinger, Robert L., Wilmette, IL, UNITED STATES

Mucic, Robert C., Glendale, CA, UNITED STATES

Storhoff, James J., Evanston, IL, UNITED STATES

Elghanian, Robert, Skokie, IL, UNITED STATES

Taton, Thomas A., Little Canada, MN, UNITED STATES

Garimella, Viswanadham, Evanston, IL, UNITED STATES

Li, Zhi, Evanston, IL, UNITED STATES

PA Nanosphere, Inc. (U.S. corporation)

PI US 2004110220 A1 20040610

AI US 2003-716829 A1 20031118 (10)

RLI Division of Ser. No. US 2001-760500, filed on 12 Jan 2001, PENDING  
Continuation-in-part of Ser. No. US 2000-603830, filed on 26 Jun 2000,  
GRANTED, Pat. No. US 6506564 Continuation-in-part of Ser. No. US  
1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944  
Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999,  
ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21  
Jul 1997, PENDING

PRAI US 2000-176409P 20000113 (60)  
US 2000-213906P 20000626 (60)  
US 2000-200161P 20000426 (60)  
US 1996-31809P 19960729 (60)

DT Utility

FS APPLICATION

LREP MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP, 300 S. WACKER DRIVE, 32ND

FLOOR, CHICAGO, IL, 60606

CLMN Number of Claims: 485

ECL Exemplary Claim: 1

DRWN 52 Drawing Page(s)

LN.CNT 8748

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 3 OF 9 USPATFULL on STN

AN 2004:94779 USPATFULL

TI Nanoparticles having oligonucleotides attached thereto and uses therefor

IN Mirkin, Chad A., Wilmette, IL, UNITED STATES

Letsinger, Robert L., Bloomington, IN, UNITED STATES

Mucic, Robert C., Glendale, CA, UNITED STATES

Storhoff, James J., Evanston, IL, UNITED STATES

Elghanian, Robert, Skokie, IL, UNITED STATES

Taton, Thomas A., Little Canada, MN, UNITED STATES

Garimella, Viswanadham, Evanston, IL, UNITED STATES

Li, Zhi, Evanston, IL, UNITED STATES

Park, So-Jung, Austin, TX, UNITED STATES

PA Nanosphere, Inc. (U.S. corporation)

PI US 2004072231 A1 20040415

AI US 2003-640618 A1 20030813 (10)

RLI Division of Ser. No. US 2001-820279, filed on 28 Mar 2001, PENDING

Continuation-in-part of Ser. No. US 2001-760500, filed on 12 Jan 2001,

PENDING Continuation-in-part of Ser. No. US 2000-603830, filed on 26 Jun

2000, GRANTED, Pat. No. US 6506564 Continuation-in-part of Ser. No. US

1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944

Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999,

ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21

Jul 1997, PENDING

PRAI US 2000-255235P 20001211 (60)

US 2000-254392P 20001208 (60)

US 2000-192699P 20000328 (60)

DT Utility

FS APPLICATION

LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S.

Wacker Drive, Chicago, IL, 60606

CLMN Number of Claims: 570

ECL Exemplary Claim: 1

DRWN 63 Drawing Page(s)

LN.CNT 11118

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide

conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 4 OF 9 USPATFULL on STN

AN 2003:294281 USPATFULL

TI Nanoparticles having oligonucleotides attached thereto and uses therefor  
IN Park, So-Jung, Austin, TX, UNITED STATES

Taton, Thomas Andrew, Little Canada, MN, UNITED STATES

Mirkin, Chad A., Wilmette, IL, UNITED STATES

PI US 2003207296 A1 20031106

AI US 2002-266983 A1 20021008 (10)

RLI Continuation-in-part of Ser. No. US 2001-8978, filed on 7 Dec 2001,  
PENDING Continuation-in-part of Ser. No. US 2001-927777, filed on 10 Aug  
2001, PENDING Continuation-in-part of Ser. No. US 2001-820279, filed on  
28 Mar 2001, PENDING Continuation-in-part of Ser. No. US 2001-760500,  
filed on 12 Jan 2001, PENDING Continuation-in-part of Ser. No. US  
2000-603830, filed on 26 Jun 2000, GRANTED, Pat. No. US 6506564  
Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999,  
GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US  
1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of  
Ser. No. WO 1997-US12783, filed on 21 Jul 1997, PENDING

PRAI US 2001-327864P 20011009 (60)

US 2000-254418P 20001208 (60)

US 2000-255236P 20001211 (60)

US 2001-282640P 20010409 (60)

US 2000-224631P 20000811 (60)

US 2000-192699P 20000328 (60)

US 2000-254392P 20001208 (60)

US 2000-255235P 20001211 (60)

US 2000-176409P 20000113 (60)

US 2000-213906P 20000626 (60)

US 2000-200161P 20000426 (60)

US 1996-31809P 19960729 (60)

DT Utility

FS APPLICATION

LREP McDONNELL BOEHNEN HULBERT & BERGHOFF, 300 SOUTH WACKER DRIVE, SUITE  
3200, CHICAGO, IL, 60606

CLMN Number of Claims: 677

ECL Exemplary Claim: 1

DRWN 75 Drawing Page(s)

LN.CNT 12981

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 5 OF 9 USPATFULL on STN

AN 2003:207240 USPATFULL

TI Bioconjugate-nanoparticle probes

IN Garimella, Viswanadham, Evanston, IL, UNITED STATES

PI .Storhoff, James J., Evanston, IL, UNITED STATES

AI US 2003143598 A1 20030731

PRAI US 2002-291291 A1 20021108 (10)

CLMN US 2001-348239P 20011109 (60)

DT Utility

FS APPLICATION

LREP MCDONNELL BOEHNEN HULBERT & BERGHOFF, 300 SOUTH WACKER DRIVE, SUITE 3200, CHICAGO, IL, 60606

CLMN Number of Claims: 99

ECL Exemplary Claim: 1

DRWN 9 Drawing Page(s)

LN.CNT 1472

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides nanoparticle-bioconjugate probes that are useful for detecting target analytes such as nucleic acids. The probes of the invention are stable towards heat and resistant to displacement by thiol containing compounds such as DTT (dithiothreitol).

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 6 OF 9 USPATFULL on STN

AN 2003:127030 USPATFULL

TI Nanoparticles having oligonucleotides attached thereto and uses therefor

IN Mirkin, Chad A., Wilmette, IL, UNITED STATES

Letsinger, Robert L., Wilmette, IL, UNITED STATES

Taton, Thomas Andrew, Little Canada, MN, UNITED STATES

Lu, Gang, Mt Prospect, IL, UNITED STATES

PI US 2003087242 A1 20030508

US 6984491 B2 20060110

AI US 2001-8978 A1 20011207 (10)

RLI Continuation-in-part of Ser. No. US 2001-927777, filed on 10 Aug 2001, PENDING Continuation-in-part of Ser. No. US 2001-820279, filed on 28 Mar 2001, PENDING Continuation-in-part of Ser. No. US 2001-760500, filed on 12 Jan 2001, PENDING Continuation-in-part of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN

PRAI US 1996-31809P 19960729 (60)

US 2000-176409P 20000113 (60)

US 2000-192699P 20000328 (60)

US 2000-200161P 20000426 (60)

US 2000-213906P 20000626 (60)

US 2000-224631P 20000811 (60)

US 2000-254392P 20001208 (60)

US 2000-254418P 20001208 (60)

US 2000-255235P 20001211 (60)

US 2000-255236P 20001211 (60)

US 2001-282640P 20010409 (60)

DT Utility

FS APPLICATION

LREP MCDONNELL BOEHNEN HULBERT & BERGHOFF, 300 SOUTH WACKER DRIVE, SUITE 3200, CHICAGO, IL, 60606

CLMN Number of Claims: 626

ECL Exemplary Claim: 1

DRWN 71 Drawing Page(s)

LN.CNT 12308

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide

conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 7 OF 9 USPATFULL on STN  
AN 2003:30222 USPATFULL  
TI Nanoparticles having oligonucleotides attached thereto and uses therefor  
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES  
Letsinger, Robert L., Wilmette, IL, UNITED STATES  
Park, So-Jung, Evanston, IL, UNITED STATES  
PI US 2003022169 A1 20030130  
US 6750016 B2 20040615  
AI US 2001-820279 A1 20010328 (9)  
RLI Continuation-in-part of Ser. No. US 2001-760500, filed on 12 Jan 2001,  
PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun  
1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US  
1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of  
Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN  
PRAI US 1996-31809P 19960729 (60)  
US 2000-176409P 200000113 (60)  
US 2000-200161P 200000426 (60)  
US 2000-192699P 200000328 (60)  
US 2000-254392P 20001208 (60)  
US 2000-255235P 20001211 (60)  
DT Utility  
FS APPLICATION  
LREP McDONNELL BOEHNEN HULBERT & BERGHOFF, 300 SOUTH WACKER DRIVE, SUITE  
3200, CHICAGO, IL, 60606  
CLMN Number of Claims: 570  
ECL Exemplary Claim: 1  
DRWN 65 Drawing Page(s)  
LN.CNT 11127

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.F

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 8 OF 9 USPATFULL on STN  
AN 2002:307830 USPATFULL  
TI Movement of biomolecule-coated nanoparticles in an electric field  
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES  
Letsinger, Robert L., Wilmette, IL, UNITED STATES  
Mucic, Robert C., Glendale, CA, UNITED STATES  
Storhoff, James J., Evanston, IL, UNITED STATES  
Elghanian, Robert, Chicago, IL, UNITED STATES  
Taton, Thomas Andrew, Chicago, IL, UNITED STATES  
Garinella, Viswanadham, Evanston, IL, UNITED STATES  
Li, Zhi, Evanston, IL, UNITED STATES  
Park, So-Jung, Evanston, IL, UNITED STATES  
PI US 2002172953 A1 20021121  
AI US 2001-927777 A1 20010810 (9)

RLI Continuation-in-part of Ser. No. US 2001-820279, filed on 28 Mar 2001, PENDING Continuation-in-part of Ser. No. US 2001-760500, filed on 12 Jan 2001, PENDING Continuation-in-part of Ser. No. US 2000-603830, filed on 26 Jun 2000, PENDING Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN

PRAI US 1996-31809P 19960729 (60)  
US 2000-176409P 20000113 (60)  
US 2000-200161P 20000426 (60)  
US 2000-192699P 20000328 (60)  
US 2000-254392P 20001208 (60)  
US 2000-255235P 20001211 (60)  
US 2000-224631P 20000811 (60)

DT Utility

FS APPLICATION

LREP Emily Miao, McDonnell Boehnen Hulbert & Berghoff, 32nd Floor, 300 S. Wacker Drive, Chicago, IL, 60606

CLMN Number of Claims: 598

ECL Exemplary Claim: 1

DRWN 64 Drawing Page(s)

LN.CNT 11435

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 9 OF 9 USPATFULL on STN  
AN 2002:280008 USPATFULL

TI Nanoparticles having oligonucleotides attached thereto and uses therefor  
IN Mirkin, Chad A., Wilmette, IL, UNITED STATES  
Letsinger, Robert L., Wilmette, IL, UNITED STATES  
Mucic, Robert C., Glendale, CA, UNITED STATES  
Storhoff, James J., Evanston, IL, UNITED STATES  
Elghanian, Robert, Chicago, IL, UNITED STATES  
Taton, Thomas A., Little Canada, MN, UNITED STATES  
Garimella, Viswanadham, Evanston, IL, UNITED STATES  
Li, Zhi, Evanston, IL, UNITED STATES

PI US 2002155442 A1 20021024  
US 6767702 B2 20040727

AI US 2001-760500 A1 20010112 (9)

RLI Continuation-in-part of Ser. No. US 1999-344667, filed on 25 Jun 1999, GRANTED, Pat. No. US 6361944 Continuation-in-part of Ser. No. US 1999-240755, filed on 29 Jan 1999, ABANDONED Continuation-in-part of Ser. No. WO 1997-US12783, filed on 21 Jul 1997, UNKNOWN

PRAI US 1996-31809P 19960729 (60)  
US 2000-200161P 20000426 (60)  
US 2000-176409P 20000113 (60)  
US 2000-213906P 20000626 (60)

DT Utility

FS APPLICATION

LREP McDONNELL BOEHNEN HULBERT & BERGHOFF, 300 SOUTH WACKER DRIVE, SUITE 3200, CHICAGO, IL, 60606

CLMN Number of Claims: 485

ECL Exemplary Claim: 1  
DRWN 51 Drawing Page(s)  
LN.CNT 8754

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides methods of detecting a nucleic acid. The methods comprise contacting the nucleic acid with one or more types of particles having oligonucleotides attached thereto. In one embodiment of the method, the oligonucleotides are attached to nanoparticles and have sequences complementary to portions of the sequence of the nucleic acid. A detectable change (preferably a color change) is brought about as a result of the hybridization of the oligonucleotides on the nanoparticles to the nucleic acid. The invention also provides compositions and kits comprising particles. The invention further provides methods of synthesizing unique nanoparticle-oligonucleotide conjugates, the conjugates produced by the methods, and methods of using the conjugates. In addition, the invention provides nanomaterials and nanostructures comprising nanoparticles and methods of nanofabrication utilizing nanoparticles. Finally, the invention provides a method of separating a selected nucleic acid from other nucleic acids.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

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